4   The method of Claim 2 **[or Claim 3]** wherein the applied voltage is in the range 50 to 20000V.

5   The method of **[any of]** Claim**[s]** 2 **[to 4]** wherein the applied voltage is greater than 300V.

6   The method of **[any of]** Claim**[s]** 2 **[to 5]** wherein the applied voltage has a substantially square shaped waveform.

7   The method **[of any]** of Claim**[s]** 2 **[to 6]** wherein the applied voltage has a pulsed waveform having a duty cycle between 0.001 and 0.5.

8   The method **[of any]** of Claim**[s]** 2 **[to 7]** wherein the voltage is switched on and off by a switching assembly comprising an insulated gate bipolar transistor.

9   The method **[of any]** of Claim**[s]** 2 **[to 8]** wherein the applied voltage has a waveform having a frequency of between DC and 100 kHz.

10   The method **[of any]** of Claim**[s]** 2 **[to 7]** wherein a metal hydride is formed on an electrode which dissociates to form hydrogen and/or deuterium atoms.

12   The method **[of any]** of Claim**[s]** 2 **[to 11]** wherein the current density generated by the applied voltage is 400,000 A/m^2 or above.

13   The method **[of any]** of Claim**[s]** 2 **[to 12]** **and further** comprising the step of feeding the electrolyte past the electrodes.

16   The method [of any] of Claim[s] 2 [to 15] **and** further
comprising the step of generating a magnetic field in the
region of the electrodes.

19   The method [of any] of Claim[s] 16 [to 18] wherein the
magnetic field is arranged to cause the plasma discharge
generated adjacent the cathode to be spaced therefrom.

20   The method [of any] of Claim[s] 2 [to 19] wherein
hydrogen and/or deuterium atoms are formed using a first
cathode and the voltage applied to generate the plasma
discharge is applied across an anode and a second cathode.

21   The method of Claim 20 **[when dependent on Claim 13 or any
claim dependent thereon]** wherein the second cathode is
downstream from the first cathode.

22   The method [of any] of Claim[s] 2 [to 21] wherein a
cathode electrode comprises tungsten, zirconium, stainless
steal, nickel and/or tantalum.

24   The method [of any] of Claim[s] 2 [to 23] wherein the
anode electrode is formed of a material which is inert with
respect to the electrolyte.

26   The method of [any preceding] claim **2** wherein the
temperature of the plasma is approximately 6000K or above.

27   The method of [any preceding] claim **2** comprising the step
of varying the ratio of catalyst to water in the electrolyte
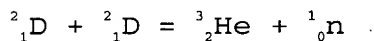in the range 1 to 20 mMol.

28   The method of [any preceding] claim **2** wherein the
electrolyte comprises water and/or deuterated water and/or
deuterium oxide.

30   The method of Claim 28 [or Claim 29] **and further**
comprising the step of varying the ratio of water to deuterium
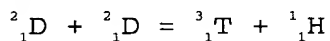
6

oxide and/or deuterated water in the electrolyte to control energy generation.

31   The method of **[any preceding]** claim **<u>2 and further</u>** comprising the step of heating the electrolyte to a temperature between 40 to 80°C prior to generating the plasma discharge.
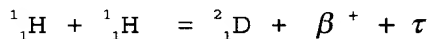
32   The method of **[any preceding]** claim **<u>2</u>** wherein fusion occurs via at least one of the following pathways:

$$^2_1D + {}^2_1D = {}^3_2He + {}^1_0n$$
or
$$^2_1D + {}^2_1D = {}^3_1T + {}^1_1H$$
or
$$^1_1H + {}^1_1H = {}^2_1D + \beta^+ + \tau$$

33   Apparatus for carrying out **[the]** <u>a</u> method of **[any preceding claim]** <u>releasing energy</u> comprising an anode, first and second cathodes, a reaction vessel having an inlet and an outlet, means for feeding an electrolyte through the vessel from its inlet to its outlet, the electrolyte having a catalyst therein suitable for initiating transitions of hydrogen and/or deuterium atoms in the electrolyte to a sub-ground energy state, means for applying a voltage across the anode and the first cathode to form hydrogen and/or deuterium atoms, and means for applying a voltage across the anode and second cathode to generate a plasma discharge in the electrolyte, the second cathode being downstream from the first cathode.